

**Providing safe  
drinking water  
in rural India,  
one hand pump  
at a time**

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## Providing safe drinking water in rural India, one hand pump at a time

Transformational impact is possible through collaboration. Evidence of this was seen when Samhita Social Ventures, with support from GIZ, facilitated a partnership between Jubilant Bhartia Foundation and Taraltec Solutions to pilot a solution that can potentially be scaled up to provide safe drinking water to a multitude of underserved people.



Taraltec Solutions has developed a disinfecting reactor that can be retrofitted in the most commonly used hand pumps around the world and kills pathogenic microbes in water, significantly reducing the incidents of water borne diseases.

Jubilant Bhartia Foundation, since its inception in 2007, has had a strong commitment to community development and upliftment and supporting innovative social entrepreneurship. Providing safe drinking water to the residents around the company's plant has been one of its focus areas.



A symbiotic partnership between the two was formed under GIZ's efforts to encourage partnerships between corporates and social enterprises to pilot innovative solutions for the benefit of the bottom of the pyramid market in India<sup>1</sup>.

## Current status of safe drinking water in India

Access to **clean water and sanitation** is one of the Sustainable Development Goals set by forth by the UNDP. Unfortunately, all Indian water bodies within and near population centres in the country are grossly contaminated with pollutants and are deemed unsafe for consumption.

- The most critically affected population group in India is the highly underserved rural population wherein ~85% of their drinking water needs are met through groundwater aquifers<sup>2</sup>.
- According to the 3rd National Family Health Survey in 2005-06, 89.8% of the population in rural Uttar Pradesh relies on handpumps or tubewells for their drinking water needs<sup>3</sup>.
- The prevailing sanitation conditions have resulted in widespread water borne diseases that affect 38 million people in India each year, as reported by the WHO, out of which 75% are children.
- 7,80,000 deaths in India annually can be attributed to water borne diseases while more than 4,00,000 out of these are caused by diarrhoea alone. Apart from this, cholera and typhoid also cause widespread casualty.
- 73 million working days are lost to water borne diseases and approximately Rs. 4000 crore is estimated to be the annual economic burden.

## The context

GIZ, under its Strategic Alliance, is supporting Corporate-Start-up partnerships to pilot innovative solutions focused at the BoP Population. The Strategic Alliance seeks to create a sustainable mechanism

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<sup>1</sup> The pilot is currently in progress

<sup>2</sup> <http://cgwb.gov.in/AQM/NAQUIM.html>

<sup>3</sup> <http://nirdprojms.in/index.php/jrd/article/viewFile/93361/69188>



on how corporates can engage and financially contribute to supporting the start-up and social enterprise incubation system and partner with incubators as well as start-ups, while at the same time getting access to innovation and business partners. The focus of the Alliance is on building partnerships with external partners and not on creating in-house incubation capacities.

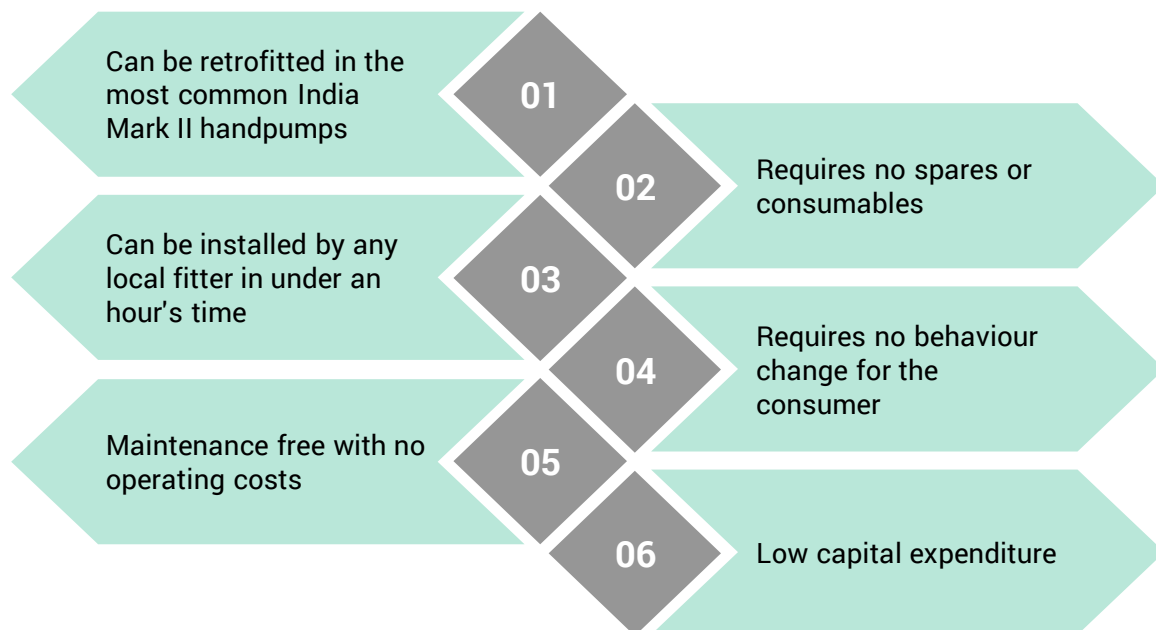
There is huge potential in involving the corporate sector in the start-up support system and in incubation. Corporates need to innovate in order to stay competitive; in the Indian context, many corporates are increasingly looking at the Middle Income or “Bottom of the Pyramid Market” (BoP) for product or business model innovation. For several corporates, developing business lines that target the BoP or partnering with start-ups/social enterprises that address the BoP is a strategic priority. Sectors like water, healthcare, food processing, safety, energy and transportation are priority sectors. However, this segment is unknown to most of the corporates as they aim to venture into these markets. Partnerships are needed to develop products and services for these markets. Partnering with start-ups and social enterprises is one potential for corporates to access new technologies and innovation, gain market understanding or find business and delivery partners. To this end, corporates are hence interested in strategic acquisitions and investments in start-ups and social enterprises.

## The Taraltec™ Solution



Taraltec Solutions is a Mumbai-based social enterprise that has presented an unprecedented solution to safe drinking water problem of rural India. Its innovative solution was felicitated at the India Innovation Growth Programme 2.0 by the Department of Science of Technology, Government of India, along with Lockheed Martin and Tata Trusts, in 2017. The founders of the enterprise also got the opportunity to present their solution at the Indo-Israeli Prime Ministers’ meet with Indian and Israeli CEOs.

The Reactor’s mechanism is inspired by bio-mimicry and employs it to kills the microbes in water, to make it safer than earlier for drinking. Other advantages of the device are as follows:



## Conventional water disinfectant methods available

Method	Drawbacks
<b>Boiling of water</b>	Recurring operating costs and consumables with a significant carbon footprint – 15 grams of CO2 emissions for every litre of water boiled
<b>Filtering</b>	Recurring cost of changing filters at regular intervals
<b>Adding chemicals like chlorine</b>	Recurring operating costs and consumables, imprecise chemical dosage has carcinogenic implications
<b>Reverse Osmosis</b>	High capital expenditure and significant wastage of water

## The Jubilant-Taraltec partnership

Jubilant Bhartia Foundation is the not-for-profit arm of the Jubilant Bhartia Group and carries out its operations in the vicinity of Jubilant's plant in Gajraula, Uttar Pradesh. As one of its community upliftment initiatives, it has installed more than 400 hand pumps in the area in the last four years to ensure that the local residents have uninterrupted access to safe drinking water.

To magnify the impact and sustainability of Jubilant's safe water efforts, Samhita, with support from GIZ, facilitated a partnership between Jubilant Bhartia Foundation and Taraltec Solutions to pilot Taraltec's innovative solution in three hand pumps, with the prospects of scaling it up.

Baseline Testing and Survey	Installation of Reactors	Endline Testing	Scale-up
<p>Raw water testing for Total Bacterial Count</p> <p>Dipstick survey to understand water usage alternate water sources and water purification habits of consumers</p>		<p>Treated water testing for Total Bacterial Count for Comparison</p>	<p>If test results show up positive, the prospective plan to scale-up installations of Taraltec Reactors™ in all of Jubilant's handpumps</p>



◀ Installation of the Taraltec Reactor in progress at the handpump in villages

## Findings from the field

### Location 1 – Union Bank



#### Water usage and alternate sources

- Located in a commercial market area of Gajraula
- Water only consumed by pedestrians
- Local shopkeepers do not consume the water as they see it unfit for consumption

#### Water purification

- Shopkeepers in the vicinity are financially well off and only drink purified water that they bring from their homes
- Pedestrian consumers do not purify the water before drinking

### Raw water report



## TEST REPORT

Format No: SALL/TRF/GEN  
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Report No. D180305030/D180305030-3

ID-D180305030-3

#### Microbiological Testing

S. No.	Test Parameters	Observed Results	PROTOCOL
1.	Total Bacterial Count, cfu/ml	1860	IS:1622:1981

### Treated water report



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Report No. D180328022/D180328022-2

ID-D180328022-2

#### Microbiological Testing

S. No.	Test Parameters	Observed Results	PROTOCOL
1.	Total Bacterial count, cfu/ml	109	IS:1622:1981

- A comparative analysis of the lab results shows a **94.14%** decrease in the total bacterial count of the handpump water.
- This result that the device is **effective** and water is now safe to be consumed with a reduced risk of water-borne diseases.

## Location 2 – Nawabpura Majhra



### Water usage and alternate sources

- Located in a rural area, adjacent to agricultural fields
- Hand pump water utilized by surrounding households, pedestrians and field workers
- No alternative sources of water inside the households

### Water purification

- Users reported not purifying the water before consumption

## Raw water report



## TEST REPORT

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Report No. D180305030/D180305030-1

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### Microbiological Testing

S. No.	Test Parameters	Observed Results	PROTOCOL
1.	Total Bacterial Count, cfu/ml	4000	IS:1622:1981

## Treated water report



## TEST REPORT

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### Microbiological Testing

S. No.	Test Parameters	Observed Results	PROTOCOL
1.	Total Bacterial count, cfu/ml	1570	IS:1622:1981

- A comparative analysis of the lab results shows a **60.75%** decrease in the total bacterial count of the handpump water<sup>4</sup>.
- The handpump will be revisited and inspected for confirmation of results.

<sup>4</sup> This result warrants a visit to the handpump as it can be attributed to:

- A leakage between the reactor and the handpump's riser pipe causing a short circuit in the water path.
- A low pumping rate of the water. A high pumping rate needs to be employed to achieve optimum results.

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## The way forward

The Jubilant-Taraltec partnership stands as the answer to not just the drinking water needs of rural Gajraula but also provides evidence of successful alternative channels that corporates can leverage to augment their impact in the private enterprise and social sectors of India.

With a potentially 90%+ reduction in the bacterial presence in the handpump water, Jubilant Bhartia Foundation now has an opportunity to elevate its community development efforts and scaling up the impact by installing the reactors in the 400+ handpumps that have been installed by it in multiple villages in the district. The removal of pathogenic microbes from the daily consumed water means healthier families, lower incidents of water borne diseases, reduction in wasted working days and an optimised economy.

With Jubilant Bhartia Foundation choosing to trust a socially focussed social enterprise like Taraltec Solutions opens the door to a series of potential partnerships wherein symbiotic relationships between corporates and social enterprises bring together the best that both the entities have to offer. Companies and corporate foundations operating at large-scale have operational excellence, access to capital and other expertise at their disposal to be able to truly create social value and establish themselves as leaders. Social enterprises bring to the table highly innovative low-cost solutions focused at the bottom-of-the-pyramid market and often need a corporate's exposure, networks and expertise to take these solutions up to scale.

GIZ has been instrumental in facilitating multiple such partnerships in a range of sectors. The possibilities of the impact are manifold and endless.



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